sphere. The information is given on the back of the daily bulletin, and the Weather Bureau is to be congratulated upon being the first to publish a map showing the distribution of pressure and temperature over a hemisphere *on the day of issue*.

It rests with the bureau, or with some still more enterprising institute if there be one, to add the available observations from the southern hemisphere, and realise what everyone who thinks about the subject knows to be the most sure basis for the study of the daily weather, viz., a daily map of the main features of the distribution of pressure and temperature over the globe.

Practically no lines are drawn on these maps for latitudes lower than 25°, and it is interesting to speculate as to what sort of characteristics a synoptic chart of the equatorial regions would show if it could be drawn. North of 25° the rotation of the earth makes it possible for pressure differences represented by "parallel isobars" to be sufficiently permanent to be charted, while ordinary centrifugal action makes "circular" isobars also equally possible. Hence on a chart for temperate and polar regions, isobars may take any shape between the small circle of a cyclonic depression and the great circle of "straight" isobars; but in the equatorial region there is no place for "parallel isobars," as they are understood further north, because the influence of the rotation of the earth is too feeble; the winds required to balance isobars such as those to which we are accustomed would be prodigious. Consequently a pressure distribution sufficiently permanent to be mapped could only be made up of "circular" isobars, and therefore a chart of isobars for part of the equatorial region ought to be a collection of small circles with whatever may be necessary to represent the diurnal variation. It would be interesting to have this conclusion verified, and the transition between the region of circular isobars and the region of straight isobars carefully explored.

Variations of pressure, small in magnitude, but associated with weather changes, are shown as irregularities in the course of the well-known diurnal variation, on barograms for equatorial regions, and the translation of a collection of barograms into synoptic charts is an attractive problem. It would presumably tell us what the meteorological conditions would be if the earth were fixed and the sun went round it in twenty-four hours as the ancients used to suppose.

One of the striking features of the maps now issued by the Weather Bureau is that for the first time in the history of official meteorological institutions, c.g.s. units of pressure and the absolute scale of temperature are used for a daily issue of charts. The isobars are figured for every five millibars, and the isotherms for every ten or five degrees on the centigrade scale measured from 273° below the freezing point of water.

This is indeed a remarkable step towards the unification of the methods of expressing pressure over the globe, and it has been immediately followed by the Meteorological Office in the corresponding charts which are published in the weekly weather report. The office figures the centibars, while the bureau figures the millibars, but that is only a matter of decimal point.

Millibars are in future to be used, though not exclusively, for the international publication of the results of the investigation of the upper air, so that while it now seems likely that before many years are passed we may see a daily synchronous chart for the globe, and really begin to study weather as it ought to be studied, we may at the same time expect to take leave of the inch and the millimetre as measures of pressure. They certainly have had a very long innings on a side to which they did not properly belong, and it will be interesting to see how the more scientific measure of pressure in pressure-units will adapt itself to practical requirements. The Meteorological Office is to make use of c.g.s. units of pressure for the Daily Weather Report on May 1 of the current year, and the preparations for that event have already placed some well-known facts in a curious light. The task which during the last sixty years we have been setting to British instrument-makers is as follows:—"Construct a barometer which will give a true pressure reading when the whole instrument is in latitude 45°, the mercury at 273° A., and its brass case at 290° A." Continental makers have had a problem that sounds simpler, viz. to construct a barometer which will give a true pressure reading when the instrument and its case are in latitude 45° at 273°A. The figures show that if instrument-makers were to make a barometer which was correct at the equator at the freezing point of water, it would be correct in latitude 45° at the ordinary air-temperature of 289° A. (61° F.) and at the poles at 305° A. (89·6° F.). So for each latitude there would be a temperature within the common range for which the readings were true pressures. At other temperatures, of course, a correction would be required. W. N. S.

THE RECENT SEISMOLOGICAL DISTURBANCES IN SOUTH JAPAN.

IN the accompanying figure is reproduced, on about half the original scale, an interesting seismogram received from Prof. A. Belar, of Laibach, through the courtesy of the foreign editor of the *Daily Mail*. The earthquake in question occurred on the morning of January 12, and was recorded by a Galitzin seismograph with electromagnetic damping. The times indicated on the diagram are referred to mean time of central Europe, which is one hour in advance of Greenwich time. In a second letter, Prof. Belar gives 10h. 40m. 35s. as the time of arrival at Laibach of the first preliminary tremors, and he estimates that the earthquake occurred at 6h. 29m. 2s., p.m., Japan time.[1] According to

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[1] According to the data given by Prof. Belar in a more recent letter, it would seem that the time at the origin should be 6h. 30m. 13s. (mean time of 135 E.) p.m., which does not differ materially from that given above.

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information recently received from Japan, 337 earthquakes occurred in the south of the country on January 12, the strongest of all being recorded at Nagasaki at 6h. 29m. 27s. The coincidence is so close as to justify Prof. Belar's conclusion that the earthquake recorded at Laibach originated near the south coast of Japan. That the earthquake was of considerable strength is evident from an account by the Rev. A. C. Hutchinson, of Kagoshima, which appeared in *The Times* for February 6. "The earth," he says, "seemed to leap convulsively upwards. The quaking was so great for two minutes that it was difficult to stand."

Prof. Belar remarks that the interest of the seismogram is due to the possible connection of the earthquake with the eruption of Sakurajami on the same day. As a rule, the foci of volcanic earthquakes are close to the surface, and the vibrations are insensible, even with instrumental aid, at considerable distances from the epicentre. If the shock recorded at Laibach were of volcanic origin, this would be the first instance of a volcanic earthquake being recorded across an entire continent since the horizontal pendulum was adapted for seismographic purposes.

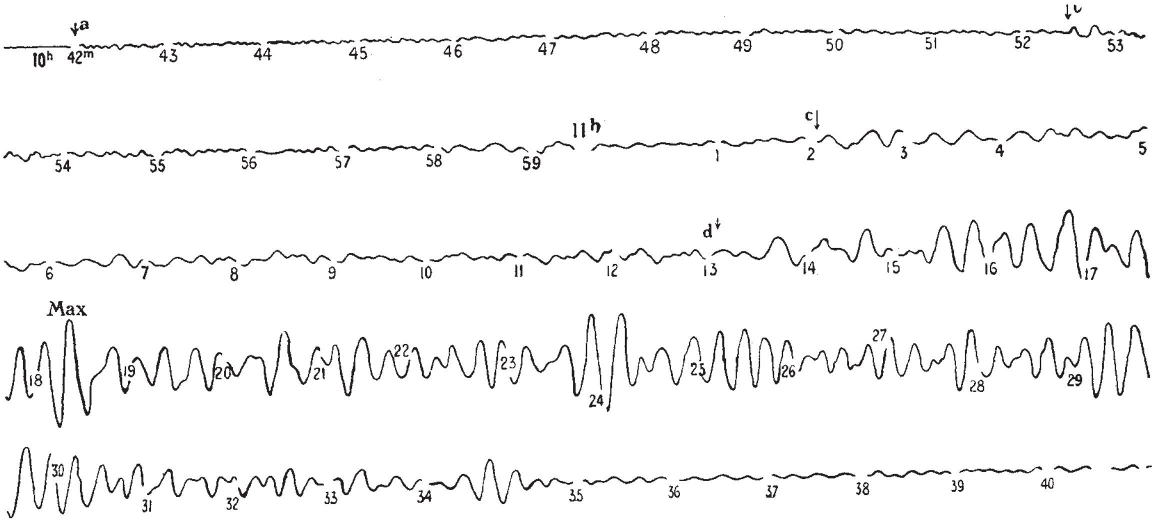

FIG. 1.—Seismogram obtained at Laibach, Austria.

Of earthquakes connected with a volcanic eruption, those which are due to the actual explosions are usually of less intensity than those which occur at other times, while the strongest shocks may originate at some distance from the volcano. For instance, in the south-west corner of Hokkaido (the northern island of Japan), there is a group of volcanoes, of which three—the Komaga-take, the Tarumai-san, and the Usu-san—have been active recently. Earthquakes are extremely rare in this part of the country, but each of the last four eruptions has taken place in fairly close connection with a strong earthquake the epicentre of which has been from sixty to 170 miles from the volcano.[1]

It seems clear that the earthquake of January 12 must have originated at some distance (perhaps fifty miles or more) from the recently active volcano of Sakurajami, for the seismic sea-waves which swept over the low-lying parts of Kagoshima arrived half-an-hour or more after the earthquake was felt in that city. But, notwithstanding this, it seems probable that Prof. Belar is correct in assigning to the earthquake a place among the volcanic phenomena, and to its focus a depth considerably greater than is usual in volcanic earthquakes.

C. DAVISON.

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[1] F. Omori, Bull. Imp. Earthq. Inves. Com., vol. v., 1911, pp. 5–7.

ALBINISM.[1]

THE word albinism is used in several senses. In the strictest sense it is used only of cases in which pigment is completely, or apparently completely, absent from the skin, hair, and eyes; in the widest sense it includes many grades of deficiency of pigment, whether generally over the body or in restricted areas. The memoir before us illustrates the difficulty of defining albinism, for according to the authors all grades of pigment reduction occur, both in Man and other Vertebrates, so that no sharp line would seem to exist between total and partial albinism. There is little doubt, however, that a number of quite different causes may give rise to pigment reduction, and that much might be done to classify the various manifestations into natural groups. Some of the more outlying types are already clearly separable, *e.g.* pathological leucoderma, and the whitening of the hair of certain species in winter, which is due to a shedding of pigmented hair and its replacement by white in autumn, followed by moult in the other direction in the spring.

Another group of so-called albinotic cases can be separated by their mode of inheritance. An inspection of pedigrees at once reveals the fact that some cases of "partial albinism" in man, in which the skin is spotted with white, or in which there is a white patch of hair on a body

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[1] "A Monograph on Albinism in Man." By Karl Pearson, F.R.S., E. Nettleship, F.R.S., and C. H. Usher. Part ii., Text. Pp. 265–524 +atlas. Price, 30*s*. net. Part iv., Text. Pp. iv.+136+xxiii+atlas. (London: Dulau & Co., Ltd., 1913.) Price, 21*s*. net. (Drapers' Company Research Memoirs. Biometric Series, viii. and ix.)

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